IInd YEAR - M.Sc COMPUTER SCIENCE

MSCS – 201:   *COMPUTER NETWORKS*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries **5** marks.   (4×5=20)

1. Write the advantages of optical fiber over twisted - pair and coaxial cables.

2. Write about connection oriented networks.

3. What is CSMA? Explain CSMA with Collision Detection.

4. Explain about pure and slotted ALOHA.

5. Describe salient features of dynamic host configuration protocol.

6. How to achieve flow control and error control in data link layer?

7. Write about the routing in the internet.

8. What is the problem in Go-Back-N protocol? How it can be sloved.

PART - B

Answer **One** question from each unit. Each question carries **15** marks.   (4×15=60)

UNIT - I

9. What is Open Systems Interconnect (OSI) reference model? What are the principles used in defining the OSI layers?

(OR)

10. a. Describe different categories of computer networks.

    b. Explain about the process of wireless transmission.

UNIT - II

11. Explain the error detecting and correcting code with example.

(OR)

12. a. Write about Manchester encoding with a suitable example.

    b. Explain the working of stop - and - wait flow control protocol.

UNIT - III

13. Explain IEEE 802.11 architecture and addressing mechanism in detail.

(OR)

14. Discuss the features of switched Ethernet, fast Ethernet and Gigabit Ethernet.

UNIT - IV

15. Explain about link state and hierarchical routing with suitable example.

(OR)

16. a. Describe approaches to congestion control.

    b. Write short notes on packet scheduling.

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IInd YEAR - M.Sc COMPUTER SCIENCE

MSCS – 202:   *SOFTWARE ENGINEERING*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries 5 marks.   (4×5=20)

1. What are the fundamental activities of a software process?

2. Describe the integrating metrics within software process.

3. What are project planning objectives? Explain in brief.

4. Briefly explain about Delphi cost estimation technique.

5. What is architectural design? Enlist different style and patterns of architecture.

6. Describe the golden rules for interface design.

7. What is meant by boundary value analysis? Give two examples of boundary value testing.

8. Describe ISO 9000 software quality standards.

PART - B

Answer **One** question from each unit. Each question carries 15 marks.   (4×15=60)

UNIT - I

9. Discuss about evolutionary process models and compare them.

(OR)

10. Explain about different software metric approches in detail.

UNIT - II

11. Write about various empirical software estimation models.

(OR)

12. What is Project Scheduling? Explain how does Earned Value Analysis will help in assessing the progress of the software team with respect to project schedule.

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UNIT - III

13. Discuss about requirement analysis and communication techniques.

(OR)

14. Explain in detail about data, functional and behavioral modelling.

UNIT - IV

15. Explain black box testing methods and its advantages and disadvantages.

(OR)

16. Discuss different issues in post processing design and procedural design.

IInd YEAR - M.Sc COMPUTER SCIENCE

MSCS – 203:   *SYSTEMS SOFTWARE*   MARKS : 20

PART - A

Answer any **Four** questions. Each question carries **5** marks.   (4×5=20)

1. Explain the data structures used by Two pass assembler.
2. Describe instruction and data formats of VAX machine.
3. Write about features of machine dependent loader.
4. Explain the terms macro definition, macro call and macro expansion.
5. Write about syntax and semantic phase of the compiler.
6. Explain about machine independent code optimization.
7. What is process state? Describe various process state transitions.
8. Write a note on interrupt processing.

PART - B

Answer **One** question from each unit. Each question carries **15** marks.   (4×15=60)

UNIT - I

9. Discuss the various elements of CSIC machine architecture.

(OR)

10. a. Describe the features of machine independent assembler.

    b. Write about the assembler design options.

UNIT - II

11. State and explain the algorithm for one pass macro processor.

(OR)

12. a. With an example program explain how linking and loading is done by a loader.

  b. Explain the design of machine independent loaders.

UNIT - III

13. a. Explain about p-code compiler in detail.

  b. Write about features of block structured languages.

(OR)

14. a. Describe storage allocation strategies.

  b. Write about shift reducing parsing technique with example.

UNIT - IV

15. a. Write an algorithm for processing I/O interrupt.

  b. Explain the concept of virtual memory and demand paging.

(OR)

16. a. Describe blocking and buffering of a sequential file.

  b. Explain about two level and three level job scheduling process.

IInd YEAR - M.Sc COMPUTER SCIENCE

MSCS – 204:　　　　　　　　*COMPUTER GRAPHICS*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries **5** marks.　　　(4×5=20)

1. Explain about CRT monitors with neat diagram.

2. Describe line and curve attributes.

3. Perform the 45° rotation of triangle A (0,0), B (1,1), C (5,2) about point P(-1,-1).

4. What are the properties of B-splines? Compare B - splines with Bezier curves.

5. Explain about window - to - viewport mapping.

6. Explain the hidden surfaces and line removal methods with their relative merits.

7. What is called parallel projection? Briefly explain all types of parallel projection.

8. Write short note on 3-D graphics packages.

PART - B

Answer **One** question from each unit. Each question carries **15** marks.　　(4×15=60)

UNIT - I

9. Derive Bresenham's line drawing algorithm. Plot a line by using Bresenham's line generation algorithm from (1,1) to (5,3).

(OR)

10. Explain the construction of the following devices with suitable sketches and their operating characteristics.

    a. Raster - refresh devices.

    b. Vector - refresh devices.

UNIT - II

11. a. Prove or disprove that two successive rotations in 2-D space are commutative.

   b. Derive the transformation matrix, when point P(x,y) is reflected about line $y=mx+c$.

(OR)

12. Illustrate Sutherland - Hodgeman polygon clipping aglorithm with suitable example.

UNIT - III

13. State and discuss various interactive graphics techniques.

(OR)

14. Discuss different data structures implementing segmented display files.

UNIT - IV

15. Explain about 3-D translation, rotation and scaling operations and derive its matrices form.

(OR)

16. Explain Back face detection method and Depth buffer method.

IInd YEAR - M.Sc COMPUTER SCIENCE

ELECTIVES – MSCS – 205A :   CRYPTOGRAPHY AND NETWORK SECURITY

MARKS : 20

Answer any **FOUR** questions. Each question carries 5 marks.   (4×5=20)

1. Write about active and passive attacks.

2. What is the difference between mono alphabetic and poly alphabetic cipher?

3. Describe the DES key generation process.

4. What various security services provided by digital signature?

5. Describe different properties of hash functions.

6. Explain about IPSec architecture with neat diagram.

7. Write about profile based Intrusion Detection System.

8. Write about the content types provided by S/MIME.

PART - B

Answer ONE question from each unit. Each question carries 15 marks.   (4×15=60)

UNIT - I

9. Describe conventional encryption model and also discuss classical encryption techniques.

(OR)

10. Explain triple round of DES algorithm. Support your answer with neat sketches.

UNIT - II

11. Draw and explain single blowfish round in detail.

(OR)

12. a. Explain RSA algorithm in detail with suitable example.

    b. Write about the principles of Public Key Cryptosystems.

UNIT - III

13. a. Explain the different message authentication functions with neat diagrams?

    b. How is GCD calculated with Euclid's algorithm? Calculate the GCD of (270, 192).

(OR)

14. a. Explain the approaches for Digital Signatures based on Public Key Encryption.

    b. Describe the concept of modular arithmetic with example.

UNIT - IV

15. Explain the operation PGP message generation and message reception.

(OR)

16. a. What does authentication header provide in case of IP security? Explain the various fields in Authentication Header.

    b. What is firewall? Explain different firewall design principles.

IInd YEAR - M.Sc COMPUTER SCIENCE

ELECTIVES – MSCS – 205B: *IMAGE PROCESSING*

MARKS : 20

PART - A

Answer any **FOUR** questions. Each question carries **5** marks. **(4×5=20)**

1. Explain about image acquisition using a circular sensor strip.

2. What are the advantages of adaptive filters? Explain about adaptive median filter.

3. Explain edge linking using Hough transform.

4. What are the different image compression standards?

5. Describe the histogram based processing in color images.

6. What is the purpose of color model and list out some color models?

7. What is meant by image segmentation? Write its use in image processing.

8. Describe the components for descriptors.

PART - B

Answer **ONE** question from **each** unit. Each question carries **15** marks. **(4×15=60)**

UNIT - I

9. Explain the fundamental steps in digital image processing and also specify components of image processing system.

(OR)

10. a) Describe image formation in the eye with brightness adaptation and discrimination.

    b) Write about linear and nonlinear operations used in image processing.

UNIT - II

11. Discuss how the various filter masks are generated to sharpen images in spatial filters.

(OR)

12. a) Explain the procedure for converting colors from RGB to HIS and vice versa.

    b) Write short notes color segmentation.

UNIT - III

13. a) Discuss sub-band coding with neat sketch.

    b) Describe arithmetic coding with an example for compression of image.

(OR)

14. What is image segmentation? Explain segmentation process by morphological Watersheds.

UNIT - IV

15. Explain about various regional descriptors with neat sketches.

(OR)

16. Discuss about mechanism of fingerprint and Iris recognition of images.

IInd YEAR - M.Sc COMPUTER SCIENCE

ELECTIVES – MSCS – 205C: *PRINCIPLES OF PROGRAMMING LANGUAGES*

MARKS : 20

PART - A

Answer any **Four** questions. Each questions carries 5 marks. (4×5=20)

1. Describe various structured data types with example.

2. What are the features of ALGOL? Give its applications.

3. Write about on genetic subroutines.

4. Explain public and private inheritance.

5. What is meant by class and object? Give the syntax in C++ and Java.

6. Explain the usage of activation records with example.

7. Write a note on co-operating processes.

8. Explain operations and linear functions on lists.

PART - B

Answer **One** question from each unit. Each question carries 15 marks. (4×15=60)

UNIT - I

9. Discuss various practical considerations in language paradigm.

(OR)

10. What is array and structure? What are the different types of arrays? Describe different array operations with example. How is it different from structures?

UNIT - II

11. Explain the components of the referencing environment of a sub program.

(OR)

12. Discuss about conditional and iterative control structures with syntax.

UNIT - III

13. a. What is meant function overloading? How it is implemented in Java?

    b. Explain about multiple inheritance with suitable example.

(OR)

14. a. Explain the parallelism in hardware and how parallelism is implemented in ADA.

    b. Describe how the polymorphism implemented in C++.

UNIT - IV

15. Explain the concepts of atoms, expressions and functions in LISP.

(OR)

16. Explain the features of functional programming languages and how it implements the concept parallelism.

IInd YEAR - M.Sc COMPUTER SCIENCE

ELECTIVES – MSCS – 206A: *MULTIMEDIA SYSTEMS*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries **5** marks. (4×5=20)

1. What is the perception Medium? Explain.

2. What is Speech Generation? Explain.

3. Explain High - Definition systems in Television.

4. Write a short note on Entropy and Hybrid coding.

5. Discuss about Principle of the CD-WO.

6. Write a short note on Frames, Tracks, Areas and Blocks of a CD-DA.

7. Explain about Multimedia file systems.

8. Explain Establishment and closing of the Multimedia call.

PART - B

Write any **One** question from the following. Each question carries **15** marks. (4×15=60)

UNIT - I

9. Describe what MIDI is, what its benefits are, and how it is best used in a multimedia project?

(OR)

10. a. Explain in detail about Information units.

    b. Explain traditional data stream characteristics in multimedia.

UNIT - II

11. Give the basic principle of video compression. Explain MPEG based video compression technique.

(OR)

12. Explain in detail about Video Signal representation.

UNIT - III

13. Explain in detail about Compact Disk Digital Audio.

(OR)

14. Wrie a short note on :

   a. Compact Disk interactive.

   b. Compact Disk Interactive Ready Format.

   c. Compact Disk Bridge Disk.

   d. Photo Compact Disk.

UNIT - IV

15. Explain in detail about Resource Management in multimedia operating system.

(OR)

16. Explain in detail about Transport Subsystem.

_____

ELECTIVES – MSCS – 206B: *SOFTWARE TESTING*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries **5** marks.   (4×5=20)

1.   Describe the model for testing with neat diagram.

2.   Explain the process of achieving (C1+C2) Coverage.

3.   What are link counters? Discuss their use in path testing?

4.   Distinguish control flow and transaction flow.

5.   What is meant by a program slice? Discuss about static and dynamic program slicing.

6.   Explain restrictions on domain testing.

7.   Give examples of four variable KV-chart.

8.   What is State Testing? What is the impact of Bugs in State Testing?

PART - B

Write **ONE** question from **each** unit. Each question carries **15** marks.   (4×15=60)

UNIT - I

9.   Discuss various categories in Requirements, Features and functionality bugs.

(OR)

10.   What is meant by path predicate? Explain various kinds of predicate blindness with suitable examples.

UNIT - II

11. Write about Data flow testing strategies in detail?

(OR)

12. Explain about sensitization in transaction - flow testing.

UNIT - III

13. Discuss in detail the domains and interface testing.

(OR)

14. Explain Regular Expressions and Flow Anomaly detection.

UNIT - IV

15. Explain about good state and bad state graphs.

(OR)

16. Write a procedure to compute looping probability of a path expression? Explain arithmetic rules with an example.

IInd YEAR - M.Sc COMPUTER SCIENCE

ELECTIVES – MSCS – 206C :   *NEURAL NETWORKS*

MARKS : 20

PART - A

Answer any **Four** questions. Each question carries 5 marks.   (4×5=20)

1. What are the characteristics of Adaline?
2. Explain about Neural Network Applications in image processing.
3. Explain linear seperability in a single layer neural network.
4. State the limitation of back propagation learning.
5. Sketch the Hebb network and show the steps of training algorithm for the same.
6. Write about fixed weight competitive net.
7. Explain about basic operation on ART1.
8. State the merits and demerits of Kohonen Self - organizing feature maps.

PART - B

Answer **One** question from each Unit. Each question carries 15 marks.   (4×15=60)

UNIT - I

9. Describe the structure of biological neuron and artificial neuron. Discuss about applications of artificial neural networks.

(OR)

10. a. Explain about perceptron architecture with neat diagram.

    b. Explain different types of neuron activation functions. Describe the role of bias in activation.

UNIT - II

11. What do you understand by BAM? Differentiate between continuous and discrete BAM? Write about algorithm of discrete BAM.

(OR)

12. Describe the Self - organizing feature - mapping (SOFM) algorithm to adaptively transform an incoming signal pattern of arbitrary dimension into discrete map.

UNIT - III

13. Discuss about ART2 architecture and its applications in detail.

(OR)

14. What is basic concept behind adaptive resonance theory (ART)? Explain basic architecture and operation of ART network.

UNIT - IV

15. What is Hopfield model of neural network? Explain the difference between continuous and discrete time Hopfield models.

(OR)

16. Explain about strictly local back propagations and give its number hidden layers.